Pranav Minasandra

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pminasandra.github.io

Interests

I am interested in and around collective animal behaviour. I am particularly excited by the idea of deciphering interactions between individuals that may not immediately be apparent an observer. I also enjoy developing new methods and testing old ones to address problems of this sort.

Education

Max Planck Institute of Animal Behaviour, Konstanz, Germany

PhD - International Max Planck Research School of Organismal Biology

2020 onwards

Indian Institute of Science (IISc), Bengaluru, India

1-year Master of Science in Biology
+ 4-year Bachelor of Science (Research) with a major in Biology

2015 - 2020

Publications

Minasandra, P., & Isvaran, K. (2020). Truncated power-law distribution of group sizes in antelope. *Behaviour*

Research experience

Quantifying the predictability of animal behaviours

PhD chapter: Developed and validated methods to quantify the predictability of animal behaviours using cichlid fishes, and investigated the connection between sociality and predictability.

Behaviour state dynamics using accelerometry and Machine Learning

Master thesis Developed a set of classifiers to analyse spotted hyena accelerometry data, and demonstrated its uses in biology.

Vegetation impermeability and animal movement

Bachelor thesis: Used agent-based methods and field observations to investigate the interactions between impermeable vegetation and animal movement.

Group size distributions in an antelope

Summer research project: Used mathematical and statistical techniques to determine the best possible distribution function to describe group sizes of Blackbuck *Antilope cervicapra*.

Fellowships

DAAD - Graduate Student Scholarship Programme

Nominated based on an evaluation of a proposal written by me

2020 Oct onwards

Kishore Vaigyanik Protsahan Yojana

All India Rank : 135
Includes stipend and contingency

2015- 2020

Teaching	**Teaching Assistantship**	2019 Aug - Dec

Teaching Assistantship

For the course *Quantitative Ecology: Research Design and Inference*
Conducted several classes, graded assignments, managed course website.

Mentored undergraduate student

Guided Ananya Passi in a mathematical modelling project focussing on habitat use and population dynamics.

Schools Conferences Seminars

Animal Behaviour Society - Virtual Seminar 2021   2021 Aug

Contributed talk: *Behavioural classifier provides insights into spotted hyena behaviour.*

Simons - NCBS *Physics of Life* Monsoon School   2017 Jun

One among 37 students selected from across India.

Technical skills

Programming languages and related
Python 3, R, Bash, LaTeX, Matlab, and C. HTML, CSS, and git.

Mathematical modelling
Models incorporating spatial and stochastic variables; Non-linear dynamics, including population dynamics and evolutionary dynamics; Probability models; Numerical simulations of all the above.

Statistics
Strong background with probability theory; Distribution fitting; Heavy-tailed distribution fitting; Quantitative analysis of movement; GLMs; Linear Models; Mixed Models; Basic statistical techniques

Computational skills
Parallel processing in Python using `multiprocessing`; Methods in machine learning; Front-end development in `R Shiny`; Agent based models; data visualisation using `matplotlib`;

Services

- Developed R ShinyApp for an age-structured COVID-19 compartmental model for Indian states, for outreach.
- Convener, Naturalists - the IISc UG Biology Club
- Initiated a semester-long lecture series called Umwelten
- Founded the UG Theoretical Biology Circle at IISc

References

Dr Alex L Jordan,
Max Planck Institute of Animal Behavior
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Dr Ariana Strandburg-Peshkin,
Max Planck Institute of Animal Behavior
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Dr Kavita Isvaran,
Indian Institute of Science
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Dr Vishwesha Guttal,
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